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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,151	01/04/2002	Amir Averbuch	01/23082	3944

7590 11/02/2004

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EXAMINER

CZEKAJ, DAVID J

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/035,151

Applicant(s)

AVERBUCH ET AL.

Examiner

Dave Czekaj

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-12 and 16-18 is/are rejected.
- 7) ☒ Claim(s) 4-6 and 13-15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities:  
  
On page 12, line 15, the examiner notes that there is no "(a)" and "(b)" in the corresponding figure.  
  
Appropriate correction is required.

### *Claim Objections*

2. Claims 5-6 and 14-15 are objected to because of the following informalities:  
  
Regarding claims 5-6 and 14-15, the examiner notes that the corresponding equations are not found in the claim. Please insert the equations into the claims.  
  
Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 7-12, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szeliski et al. (6044181), (hereinafter referred to as "Szeliski").

Regarding claims 1 and 10, Szeliski discloses an apparatus that relates to constructing and rendering panoramic mosaic images from a sequence of still or video images (Szeliski: column 1, lines 9-12). This apparatus comprises "providing a first and second image" (Szeliski: figure 9, items 905 and 910,

Art Unit: 2613

wherein the pair of images are  $I_0$  and  $I_1$ ), "providing an initial estimate of each of two translation parameters" (Szeliski: column 9, lines 11-13, wherein the two translation parameters are the translation parameters from each (2) input images), "determining the relative global motion between the first and second images using a gradient approach in an iterative process starting with the initial estimate, whereby the gradient approach provides the center of each interval and results in improved global motion convergence" (Szeliski: figures 9-11, wherein the iterative process are the "loopbacks" shown in the figures, column 20, lines 54-67-column 21, lines 1-14, wherein the center of the interval is the center of the patch, the global motion is the global alignment). Although Szeliski fails to show the symmetric and bi-directional gradient approaches as claimed, Szeliski does show a gradient approach which provides the center or optimal location of each interval (Szeliski: column 20, lines 54-67-column 21, lines 1-14, wherein the center of the interval is the center of the patch). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the symmetric and bi-directional approach in order to obtain an apparatus that operates more efficiently by choosing the best approach for different types of input images.

Regarding claims 2 and 11, Szeliski discloses "providing an initial interval for each translation parameter" (Szeliski: column 20, lines 54-67, wherein the initial interval is the patch), "dividing each parameter interval into two equal or non-equal sub-intervals" (Szeliski: column 20, lines 58-59, wherein the interval is

the patch, the sub-interval is the 16x16 pixels. The examiner notes that in certain cases such as image boundaries, the sub-interval size would be un-equal), "providing a basic symmetric gradient formulation that includes the sub-intervals" (Szeliski: figure 9, wherein the gradient formulation is the gradient, column 20, lines 58-60, wherein the intervals are the patches), "running in each iteration a point-wise linearization procedure" (Szeliski: column 20, lines 54-56, wherein the point-wise linearization procedure is the point correspondence), and "deriving in each iteration a symmetric linearization error based on the procedure" (Szeliski: column 20, lines 15-20, wherein the linearization error is the misregistration error).

Regarding claims 3 and 12, Szeliski discloses "using a motion parameters vector representing the plurality of parameters" (Szeliski: column 9, lines 9-25, column 11, lines 25-27).

Regarding claims 7 and 16, Szeliski discloses "the global motion is selected from the group consisting from image translation, rotation, affine motion, and panoramic motion" (Szeliski: column 9, lines 32-33, wherein the rotation is the three-dimensional rotation).

Regarding claims 8 and 17, Szeliski discloses "improved convergence properties include an improved convergence rate" (Szeliski: column 24, lines 7-9, wherein the improved convergence rate is the quicker convergence).

Art Unit: 2613

Regarding claims 9 and 18, Szeliski discloses "improved convergence properties include improved linearization error rate" (Szeliski: column 20, lines 34-36, wherein the improved error rate is the reduced accumulated error).

***Allowable Subject Matter***

5. Claims 4-6 and 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:


US-6278736	08-2001	De Haan et al.
US-6356647	03-2002	Bober et al.
US-6628715	09-2003	Iu et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dave Czekaj whose telephone number is (703) 305-3418. The examiner can normally be reached on Monday - Friday 9 hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Kelley can be reached on (703) 305-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2613

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
CHRIS KELLEY  
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